SCENT GLAND HAIR IN THE MARSUPIAL GLIDERS, *PETAURUS NORFOLCENSIS* AND *PETAURUS BREVICEPS*. *Memoirs of the Queensland Museum 43(2): 776. 1999.*- Structural differentiation of hair from cutaneous glandular regions has been observed in a wide range of eutherian mammals. Referred to as osmetrichia, these specialised hairs facilitate the retention and/or dispersal of scent-gland secretions. The presence of osmetrichia in marsupials has not been established. This note reports on the examination of scent gland hairs in two species of gliding possum from the genus *Petaurus*, which rely upon cutaneous scent glands for social cohesion (Schultze-Westrum, 1969). Osmetrichia were not found in these species.

Samples were obtained from adult animals housed in captivity (University of Queensland). Hairs were collected from the frontal and sternal scent glands of four male *Petaurus breviceps* and four male *P. norfolcensis*. For comparative purposes, samples were also collected from adult females which do not possess these glands (two *P. breviceps*, three *P. norfolcensis*), and from the dorsal body surface (of both males and females). Hairs were collected from both directly above the gland surface and from the area surrounding the gland. In the case of females, hairs were collected from the region corresponding to gland location in males. Hairs were cleaned in a series of hexane and ethanol washes (as per Balakrishnan 1987) and processed for SEM (to determine surface features of the cortex) and light microscopy (to examine medullary structure).

Hairs from non-glandular body regions showed no variation from the scale patterns reported in Brunner & Coman (1974) in either species (Fig. 1A). Hairs from gland samples also showed no variation from patterns reported by Brunner & Coman (1974). Gland secretions were observed on the hair surface and clinging to scales in many samples (Fig. 1B), however, the scale patterns of these hairs did not differ from those of other body regions or from females. Some scales did radiate away from the cortex to form intercuticular spaces which held glandular secretion (Fig.1C), but similar structures were also observed in the proximal half of body hair from non-glandular regions, as illustrated in Brunner & Coman (1974: 105, fig. h; 107, fig. h).

Longitudinal grooves or ridges were observed occasionally in samples from sternal and frontal glands. These were not observed in samples from non-glandular regions or in samples collected from females and may therefore facilitate retention/storage of glandular products. The low prevalence of such hairs in samples (4%) however, indicate that this is probably a preparation artefact, and a similar effect is known to result from processing of human hair (D. MacGregor, pers. comm.). Longitudinal sectioning of hair revealed no compartmentalising of medullae in any samples.

We conclude that the scent gland hair of *P. breviceps* and *P. norfolcensis* does not exhibit sufficient structural specialisation to warrant classification as osmetrichia. Osmetrichia in eutherian mammals are a functional adaptation associated with chemical communication (e.g. Balakrishnan, 1987; Muller-Schwarze et al., 1977). They might then, also be expected to occur in Petaurid gliders. The absence of osmetrichia in this group suggests that effective pheromone transfer may be achieved simply by rubbing the gland surface (which is often bald in socially dominant males) against objects/conspecifics (see Russell, 1984). Osmetrichia have recently been described in a dasyurid marsupial *Antechinus stuartii* (Toftegaard & Bradley, in press). The authors describe ridges and grooves on what appear to be normal cuticular scales and speculate on the importance of these structures in retaining sebum containing putative volatile pheromones. We suggest that the evidence presented by these authors requires confirmation, and that further quantitative and comparative studies of scent glands and hairs is needed to clarify their roles in the Marsupialia.

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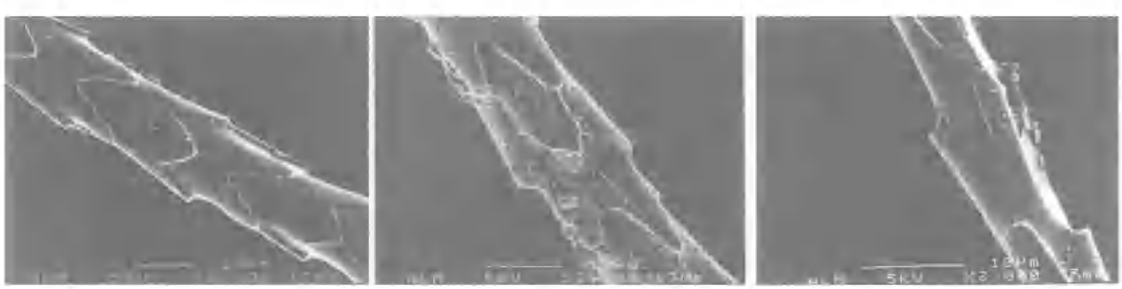

FIG. 1. A, Typical scales from the proximal half of non-glandular hair in *P. norfolcensis*, dentate margins. B, Glandular residue adhering to scales from the proximal half of hair from sternal gland of *P. norfolcensis*. C, Radiating scales forming intercuticular spaces holding glandular residue, from frontal gland of *P. breviceps*.